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AN ARTIFICIAL PROSTHETIC APPLIANCE TO CORRECT CHEST MALFORMATION
[Hyunggwakgihyeongeul Gyojeonghagi Wihan Ingongbocheolmool]

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Brief description of figures

Figure 1 is a figure illustrating the artificial prosthetic appliance of this design.

Figures 2a-2c is a front view illustrating the operating method of the artificial prosthetic of this design.

Figures 3a-3d is a sectioned drawing illustrating the operating method of the artificial prosthetic of this design.

Description of symbols for essential parts in the drawings

10: Chest correction bar 11: Groove

12: Hole 20: Stabilizer

21: Inserting side

Detailed description of the invention

Objects of the invention

Technology area of the invention, and the relevant prior art

The present design relates to artificial prosthetic appliances that are inserted in a human body for the purpose of treating chest malformation, and to an artificial prosthesis as well as convenient procedures for effective chest correction.

A relatively common 'chest malformation' is one whereby the chest is funneled, that is, it becomes more concave or more convex than one of a normal person due to depressed or eminent sternum and peripheral costal cartilage. The condition, known as Pectus Excavtum, is commonly referred to as 'funnel chest.' It has frequently appeared in Asian people, and while it has a displeasing appearance cosmetically, it has also been linked to stunted growth or inhibition of the functions of internal organs

located in the thoracic region. For this reason, it is considered desirable to operate on patients who have been diagnosed with funnel chest at an early age.

The conventional surgery for funnel chest attempted to correct the chest depression by the insertion of an artificial prosthesis into grooves which had been cut in the costal cartilage in both sides of the chest, and pulling the thorax and the costal cartilage forward to make an appropriate thorax.

However, this conventional procedure was inconvenient in several ways, as it was a long, highly complex procedure, and was also quite difficult for physicians to perform, as it required trimming of the costal cartilage inside of the chest and lifting up the thorax, which was followed by filling in the grooves with the artificial prosthesis.

An additional problem was that many patients suffered from pain during the trimming of costal cartilages.

Technological objective to be achieved by the invention

It is an object of the present design to provide an artificial prosthetic appliance that can effectively correct the thorax, while allowing an easier procedure for surgeons and a less painful procedure for patients, through the insertion and fixing of an artificial prosthetic appliance, which is designed to lift up the depressed thorax and costal cartilages, inside of a human body.

In order to achieve the above objective, the present design provides an artificial prosthetic appliance consisting of a chest correction bar which is inserted inside of a human body to lift up the thorax and the costal cartilages, and a stabilizer inserted into an end of the aforementioned chest correction bar which prevents said chest correction bar from rotating inside of the human body.

Construction and function of the invention

The artificial prosthetic appliance of the present design shall now be explained in detail, with drawings attached hereinafter.

Attached Figure 1 is a figure presenting an artificial prosthetic appliance of the present design, which consists of a chest correction bar (10) designed to lift up the thorax and peripheral costal cartilages inside of a human body, and a stabilizer (20) which is inserted into this chest correction bar (10), and both said chest correction bar (10) and said stabilizer (20) are made of stainless steel or its alloy, which will not rust and is safe to insert in the human body.

The above chest correction bar (10) shall have a curvature adequate to help to lift up the thorax and the costal cartilage, linking both sides of costal cartilage inside of a human body smoothly, and has the material strength to be bent with force in order to adjust the curvature of the chest correction bar (10) according to the width or curvature of the costal cartilage of the patient.

In addition, the above chest correction bar (10) is in a rectangular sectional form with sufficient width to allow the folded area to be flat to lift up the thorax and the costal cartilage, and both of its ends are slightly narrowed compared to the center and are built up with several grooves (11), to which a thread may be hooked when the surgeon is sewing to affix the chest correction bar (10) in the patient's body.

At the distal end of the above chest correction bar (10) is also a form built up with holes (12) to which a thread may be tied when inserting the chest correction bar (10) in a body.

Meanwhile, the above stabilizer (20) has an inserting side (21), which can be inserted into both sides of the above chest correction bar (10), and is placed at lower end and is in the form of a fixed part (22), with a required length cross at a right angle with the above chest correction bar (10).

The stabilizer (20) is intended to prevent a chest correction bar (10) from rotating inside of a human body when a patient breathes or exercises, and thus it is inserted into one side or both sides of the above chest correction bar (10) if necessary.

The attached Figures 2a-2c present procedures for implantation of an artificial prosthetic appliance of this present design, which can be described as follows: perforate the thorax from the left to the right with a surgical instrument (30), and then pull this instrument (30) out to perforate the thorax with that thread (31) while holding a thread (31) with one end of that instrument (30) (Figure 2a), and bind up this thread (31) on the hole (12) where it is formed at the distal part of the above chest correction bar (10) (Figure 2b).

Subsequently, pull the above thread (31) and then insert above chest correction bar (10) in the torso (Figure 2c).

Attached Figures 3a-3d present a sectional figure, showing procedures by using an artificial prosthetic appliance of this present design. Insert a chest correction bar (10) to a body where the thorax (50) and the costal cartilage (40) are depressed inside as aforementioned procedures and then insert a chest correction bar (10) whose depressed side to be adjacent to the thorax (50) as described in Figure 3c as this chest correction bar (10) is curved at an adequate curvature.

Subsequently turning the chest correction bar (10) to 180° while holding both sides of it (10) as described in Figure 3d, an outline of a chest will be made as expected as the thorax (50) and the costal cartilage (40) will be lifted up instantly, following the curved form of the chest correction bar (10).

The chest correction bar (10) which is lifted up as described above can be fixed by sewing the muscle or the skin using both ends of the grooves (11), and the chest correction bar (10) is prevented from rotating through the insertion of the stabilizer (20) to one or both ends of the chest correction bar (10) as needed.

The above stabilizer (20) will not be fixed in the body, but shall be inserted into a chest correction bar (10), and thus will not affect the patient's growth, as the stabilizer (20) will become wider as the costal cartilages grow.

It is usually desirable to install two such chest correction bars (10).

Following a surgical operation using an artificial prosthetic appliance as decribed above, the artificial prosthetic appliance may be removed approximately 2 to 3 years after the operation, as the thorax (50) and peripheral costal cartilage (40) are fixed as per the form of the chest correction bar (10).

Effects of the invention

The procedure of using an artificial prosthetic appliance of the present design will provide an easier procedure for both surgeons and patients compared with conventional methods of the funnel chest correction, involve minimal incisions on the patient's body, and cause less pain to patients as it doesn't necessarily require making grooves on the costal cartilages.

In addition, it is an effective method of correcting the thorax and peripheral costal cartilages.

Claims

1. An artificial prosthetic appliance, for the purpose of correcting chest malformation, which consists of a chest correction bar (10) inserted inside of a human body to lift up a depressed thorax and costal cartilages, and a stabilizer (20) which is affixed by being inserted into an end of above chest correction bar (10), to prevent said chest correction bar (10) from rotating inside of the body.

2. In Claim 1, the above chest correction bar (10) is an artificial prosthetic appliance, for the purpose of correcting chest malformation, which has the characteristic of a curved form with adequate curvature to link to both costal cartilages smoothly, and is of a rectangular sectional form with a required width.

3. In Claim 1, the above chest correction bar (10) is an artificial prosthetic appliance, for the purpose of correcting chest malformation, which has the characteristic of having a form that is slightly narrowed at both ends compared to the center, and of having formed holes (12) at the distal ends.

4. In Claim 3, the above chest correction bar (10) is an artificial prosthetic appliance, for the purpose of correcting chest malformation, which has a characteristic of having several holes (11) formed at the edges of both of its ends.

5. In Claim 1, the above stabilizer (20) is an artificial prosthetic appliance, for the purpose of correcting chest malformation, which has the characteristic of having an inserting side (21) where the above chest correction bar (10) can be inserted at lower ends, and of a fixing part (22) crossing at right angles with the above chest correction bar (10).

6. In Claim 1, above chest correction bar (10) and stabilizer (20) are artificial prosthetic appliances, for the purpose of correcting chest malformation, which have a characteristic of being formed of stainless steel or its alloy, which is not harmful to the human body.

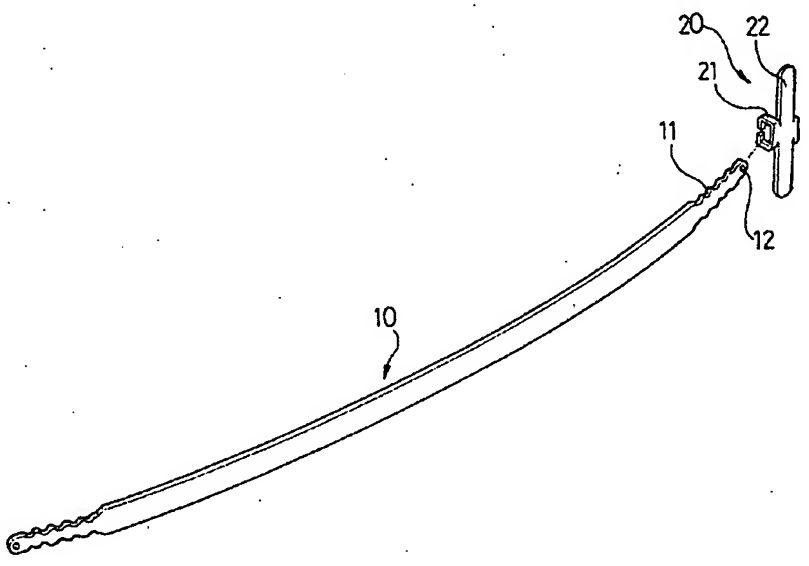

Figure 1

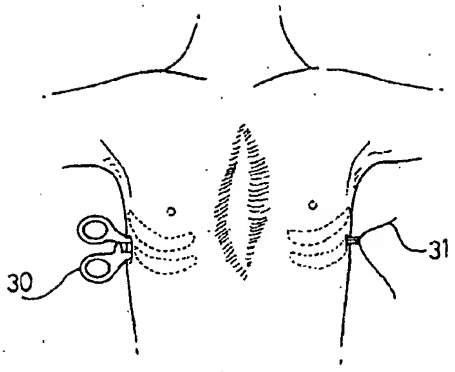

Figure 2a

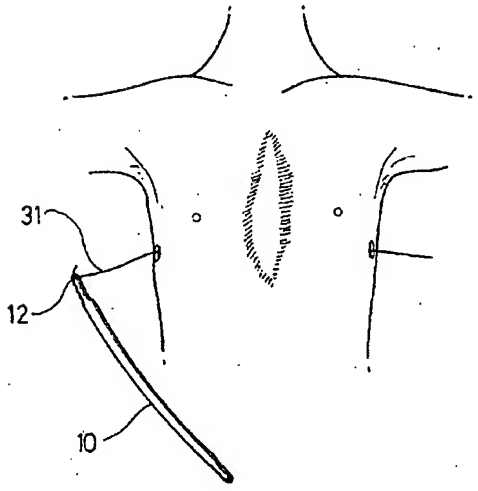

Figure 2b

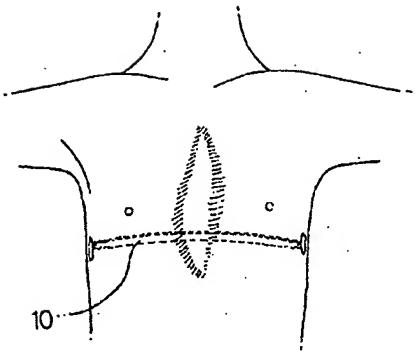

Figure 2c

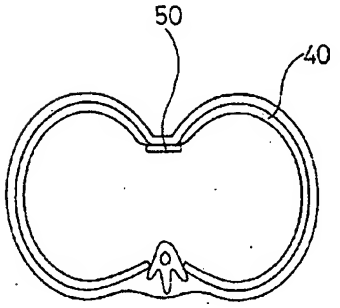

Figure 3a

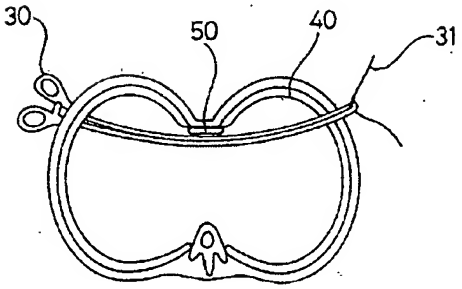

Figure 3b

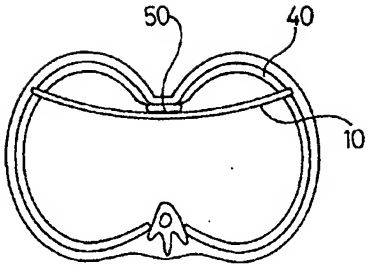

Figure 3c

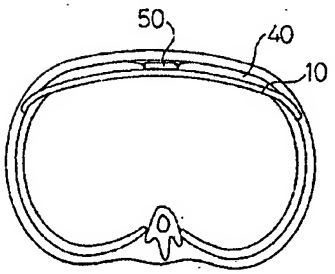

Figure 3d